

SIXPENCE

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FREQUENCY MODULATION

Part 1

... By R. A. Priddle, VK2RA ...

Few VK Hams have had the opportunity of experimenting with frequency modulation, but a perusal of available literature indicates that it should become popular when we are again on the air. As everyone is talking of post war reconstruction, why shouldn't we?

The normal amplitude modulated (a.m.) signal consists of a carrier of constant frequency, the amplitude being varied at voice frequency. With 100% modulation the carrier amplitude varies between zero and twice the unmodulated value. For this condition the modulator must supply power equal to half the unmodulated input to power amplifier. For voice communication it is desirable to limit the audio channel to 4000 cps, so that the total band width is 8Kcs.

The F.M. signal on the other hand has a carrier of constant amplitude, so that the power does not vary, and a power modulator is unnecessary. The FREQUENCY of the carrier is varied either side of the mean frequency by the modulator. The frequency variations occur in step with the applied voice frequency, but the AMOUNT of the variation may be anything from a small value to several times the voice frequency.

The maximum amount by which the carrier shifts to one side (and the other) of the mean frequency is known as the FREQUENCY DEVIATION, and the ratio which this deviation bears to the maximum voice frequency is the DEVIATION RATIO. Modulation is LINEAR when the deviation is proportional to the AMPLITUDE of the modulating signal (the louder the signal the greater the deviation). Over modulation cannot occur.

For example, assume a 1000 Kcs carrier frequency, modulated by a 4000 cycle tone with a deviation ratio of 4. Then the carrier

frequency will vary 4000 times per second between 984 and 1016 Kcs at maximum gain. If the gain of the speech amplifier is halved the frequency will vary 4000 times per second between 992 and 1008 Kcs.

The same transmitter, with a 1000 cycle tone and full gain will vary 1000 times per second between 984 and 1016 Kcs.

For high fidelity broadcasting deviation ratios of about 5 are used in order to improve the signal-noise ratio. As explained in Ref. 2 the higher the deviation ratio, the less effect the variable amplitude noise pulses have on the receiver.

This only applies, however for land signals, audit has been found that the wider deviations are less readable than narrow-band F.M. signals when the signal strength is low (Ref. 4, 5, and 7). This is due mainly to the extra I.F. band width of the wide band receiver picking up more noise than with a limited I.F. Band width.

A deviation ratio of 1 has been found to give the best signal-noise ratio for weak signals, and this appears likely to become standard for Ham use...Reference 7 shows a comparison between F.M. with deviation ratio of 1 and A.M., and indicates that a 1.7 microvolt signal on F.M. is as readable as a 4.1 microvolt signal on A.M. This is equivalent to a power increase of nearly six times at the transmitter...Now are you getting interested?

A deviation ratio of 1 has other advantages, because the band-width required is only the same as for A.M. and also quite good reception is possible on an ordinary superhet detuned to one side of the carrier frequency. Of course, such an arrangement does not discriminate against noise as a proper F.M. receiver will.

Transmitter and receiver design will be discussed next month, but we will first summarize the advantages of F.M. from the Ham viewpoint.

ADVANTAGES.

- 1...Improvement in Signal-noise ratio (if F.M. receiver used).
- 2...No modulation POWER required, so two stage speech amplifier and receiving type modulator tube sufficient.
- 3...Transmitter adjustments, grid drive, L/C ratios etc. as for CW, provided neutralization correct.
- 4... The voltage and power ratings of tubes, tank condensers etc. are the same as for CW since the signal amplitude does not vary.

5...Overmodulation cannot occur. If the receiver band-width is too narrow, reducing the gain at the transmitter will rectify any distortion in the receiver.

6...Amplitude fading has no effect on the signal.

DISADVANTAGES:

1...An F.M. signal is very susceptible to phase distortion arising from multiple wave-paths, and is therefore not suitable for DX; It may possibly be of use for DX on 28MC, but not on 14MC.

2...A special receiver or adapter is necessary. As mentioned above, narrow-band F.M. can be copied on an ordinary superhet, so that the second disadvantage can be overcome.

The way in which this works can be understood if the selectivity curve of the receiver is drawn. With a good selective receiver this curve has a sharp peak, falling off rapidly on either side of resonance. The sloping sides of the curve are practically straight lines for several Kcs.

If the receiver is tuned to one side of the F.M. carrier, as the modulator varies the frequency towards the resonant frequency of the receiver, the receiver output will increase. Since the sloping side of the curve is practically straight the output of the receiver is proportional to the frequency deviation of the signal. This is the condition required for linear F.M. reception (see definition of linear modulation).

Next month we shall include some notes on F.M. detection and F.M. transmitters.

REFERENCE:

- 1..Radio Amateurs Handbook 1942 or 1943.
- 2.."Noise rejection in Frequency Modulation"..Hierath, QST Dec '40.
- 3.."F.M. Noise Characteristics"..Crosby Proc. I.R.E. April '37.
- 4.."F.M. Propagation Characteristics" ..Crosby RCA Review Jan '40.
- 5.."The Service Range of F.M."..Crosby RCA Review Jan '40.
- 6.."Some thoughts on Amateur F.M. Reception"..Grammer QST Mar '41.
- 7.."Band width and Readability in F.M."..Crosby QST March '41.
- 8.."A Crystal controlled F.M. Exciter"..Bollinger QST Oct '42.

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ITEM...Few of us stop to realize the value of ordinary things which we now take for granted because of modern production methods. Joseph Henry, who made some of the most important discoveries in connection with induction, was forced to insulate bare wire by hand with silk from his wife's dress to obtain the large inducances with which he worked....Ohmito News.

NOTES ON RECEIVER DESIGN

By Bruce Mann, VK3BM

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A short time ago we published an article dealing with different aspects of receiver design. We have heard quite a fair amount of discussion regarding some of the points raised in the article and one of our readers--Mr. Bruce Mann of Quambatook, Vic. has discussed some of these points in the course of a long and interesting letter to us. He deals with the subject in the same order as was used by Mr. Eby in the original article and as we have no doubt you will find his discussion as interesting as we did, we decided to publish part of Mr. Mann's letter in the form of the following article. Here it is:-

SENSITIVITY AND NOISE. In a receiver functioning properly, all noise comes from the first stage. There are two sources (1) THERMAL NOISE due to erratic movement of free electrons in the aerial coil circuit. (2) VALVE NOISE due to irregular movements in electron stream to the plate of the first tube. The greater the gain and the lower the plate current the less noise. So it is up to the tube manufacturer to produce the suitable tube---and so he has lots of 'em.

Assuming you are designing the most sensitive receiver you possibly can, you would naturally be using an RF stage, as in a converter valve, valve noise is double that of an RF valve.

It can be shown by mathematics that if you can get a gain of 10 in your RF valve, then only 15% of the noise voltage is due to valve noise and 85% to thermal noise in the aerial coil. Reduced to terms of audibility this 15% is entirely negligible--so why use fancy tubes and push-pull RF stages on any frequency except extreme highs? You can easily get 10 or more gain on 20 meters and up, so for these bands you may use a 6K7G, etc. and rest assured that no change of valve type will make any appreciable improvement in valve noise. On 10 metres, even with care I believe it may be possible to get enough gain out of one of these tubes to prevent tube noise, but I purchased a 956 acorn to be on the safe side.

Reverting to noise in the aerial coil, you cannot stop the thermal agitation, but you can do a lot to build the signal up above it. This can be done by:-

(a) Use highly efficient tuned aerial. Use your transmitting antenna for reception. Couple with a link which may be switched over from one to the other. If the antenna is highly directional you will also lose a lot of noise due to QRM and QRN.

(b) Get the best possible transfer from antenna to grid coil of the RF tube. Use an adjustable link and couple for maximum gain on a weak signal. This is extremely tight coupling and will so damp the tuning of the grid coil that selectivity will be insufficient to prevent image interference on 20 and 40 metres. To overcome this a second RF stage designed for selectivity is required.

(c) Use as high Q coil as is possible. This builds up the signal by its flywheel effect, and is affected by its size, shape factor, L/C ratio, dielectric losses etc.

It is also reduced if damped by low input impedance of the following tube. Of all the likely tubes the 1851 is about the worst in this respect and the 956 one of the best.

For the ultra frequencies neither great sensitivity nor selectivity are needed therefore the 1851 is ideal, and 1851's in PP not necessary.

INTERMEDIATE AMPLIFIER. A very narrow band pass effect is also a great advantage in reducing noise as well as obtaining selectivity. Three popular methods: -

- (a) Crystal Filter
- (b) Audio Filter
- (c) Special I.F. Amplifier.

(a) The crystal filter is not altogether satisfactory--like Pat's horse--it's hard to get going and it is not much good when it does go. It's Q is so great that signals are distorted, yet the skirts of its resonance curves are so broad that strong impulses of QRN etc. come through as a ringing noise. These can be cut out by a complicated IF noise silencer.

(b) A highly selective tuned audio filter has similar distortion and ringing effects as the crystal. (a) and (b) are of little use for tone.

(c) I have experimented along the lines suggested by David Eby, but you really need two IF amplifiers, one for tone just broad enough for good intelligibility, and a very sharp one for GW. When a very selective IF amplifier is used for tone, it is advisable to use an audio tone control of a type that progressively cuts out the bass. Thus with the IF amplifier cutting the highs and the tone control cutting the bass you have just the band of audio frequencies left necessary for intelligible speech, and the resultant tone is like the landline telephone.

BEAT OSCILLATOR STABILITY. Why put in a crystal here when the HF oscillator is 50 times as liable

to drift, yet drift is just as serious--cycle for cycle. The HFO should be designed with low L/C ratio to track with RF and Aerial coils of high L/C ratio, and the voltage may be stabilized with VR150-30 neon tubes.

TO SUMMARIZE... The ideal ham DX receiver consists of:-

Front end...for 80, 160 metres and BC switched with 1..6U76 or similar RF stage.

Tuner for 40 and 20 metres 2...6U7G's RF stages.

Tuner for 10 metres 1..956 RF stage.

The above is interchangeable into 2 I.F.'s for CW and fono, or a third if you must listen to high fidelity broadcasts.

A separate receiver altogether for ultra highs.

Not an AUSTERITY outfit! Hi!

I might add that an acoustical labyrinth large enough to damp the speaker throughout its whole range is a great improvement in DX reception as it reduces speaker "rumble" on QRN etc.

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OUR PROBLEMS

Readers will remember that recently we asked for ideas for the rejuvenation of old electrolytic condensers. In a recent issue of QST the following information was published:-

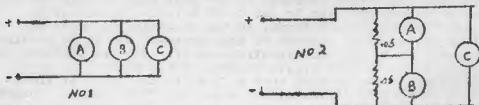
"I have been experimenting with both wet and dry types of electrolytic condensers, and found that about half the time the dry electrolytics are in good condition after failure, except for corroded terminal strips or a small burned spot on the positive plate.

Several of the wet electrolytics that I have opened were found to be empty, while others were full of a white substance. Careful washing and filling with a less-than-saturated borax solution restored the usefulness of these units. The use of a film of oil on the top of the solution would seem to be desirable to cut down evaporation. From some experiments it seems that there is a tendency for the leads entering the solution to fail right at the point where the air and solution meets. Some sort of solution proof paint on the lead ought to stop such failures."

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This month a very interesting problem has been unearthed by a member of the Victorian Division. We publish it herewith for readers perusal, and of course comments would be appreciated. The meters used were:- Meter A...Western Model 701..0-500 Volt

DC..1000 ohms P/v Motor B. Beede 0-500 volt DC...0-1 M/a with ext multiplier. Motor C. Western 301...0)1500 VhC. 0-1 M/a with ext. multiplier.



The following readings were Noted:-

Circuit No. 1

A	B	C
110	109	100
150	148	145
200	200	200
250	250	250
300	300	300
350	348	350
405	405	410
460	460	470
500	500	515

Circuit No. 2.

A	B	C	A & B
250	250	525	500
280	280	615	560
340	340	730	680
425	425	825	850
500	500	1100	1000

The dial of meter C has an 0-1500 volt scale which is divided into

10 divisions of 100 volts with subdivisions of 20 volts. Readings can be taken to the nearest 5 volts. Meter A has been checked against other similar instruments and can be regarded as sufficiently accurate for normal usage.

What is the actual supply voltage of circuit No. 2? It is the sum of the readings of meters A & B. Why is it that Meter C. gives a higher reading? If it is that read on Meter C, why does the sum of the readings of meters A & B differ from this? If the error is due to the multiplier resistor of meter C, would its adjustment for accuracy at 1000 volts result in a true reading at 1500 volts?

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WIRELESS INSTITUTE OF AUSTRALIA (W.A. DIVISION) INC.

VICE-PRESIDENT'S ANNUAL REPORT.

Owing to the continuance of war conditions over the past year, amateur radio in the accepted sense of the term has remained at a standstill, and the entry of still more of our members into the various branches of the armed forces has further depleted our already small numbers.

F.H.Q. has been very active during the year and has kept us fully informed on matters of importance. They have regularly forwarded to us copies of the minutes of their meetings, and your Secretary has, in turn, kept F.H.Q. informed of affairs in VK6.

The most important activity of the past year in this State has been the inauguration by the Civil Defence Council of an Emergency Communication Network, in the operation of which the services of qualified members of this Division are to be utilized. This network calls for the establishment of radio transmitters and receivers at the various A.R.P. centres as a secondary means of communication, to be brought into service in the event of breakdown or overloading of the normal telephone facilities. A committee comprising GUP, GUX and GGM was appointed some time ago to formulate and place before the Civil Defence Authorities a scheme suitable for the Council's requirements. The principal points of the proposed scheme were the installation of a fixed transmitter and receiver at the A.R.P. Central Control, and the provision of transportable battery powered transmitter-receiver units which could be taken to and set up at any suburban centre with which telephonic communication had been lost.

The plan was submitted by the Council to the PMG. Dept. for approval which was eventually granted together with the necessary licence. The Council then requested that two units be constructed so that initial tests could be carried out, and, largely due to the co-operation and efforts of GLE these units were built. They were given their first official test during last Sunday's A.R.P. exercises, when they were in use with entirely satisfactory results to all concerned. Arrangements are now in hand for the permanent installation of the central station.

A civil defence radio communication network is in partial operation in VK2, and is designed on an ambitious scale, using a 200 watt, central transmitter with a 140 foot vertical radiator. A network scheme is also mooted in VK5.

It is proposed to recruit the operating personnel of these various schemes including our own from the amateur ranks, and this in itself represents an important advance, as it is the first occasion on which government authorities in this country have recognised the amateur fraternity in the field of national service. It remains to us to justify this recognition by acquitting ourselves faithfully and well in whatever work may be entrusted to us.

Your Council takes this opportunity of conveying to all members wherever they may be, their best wishes for the coming year, and trust that in the not too distant future, circumstances will again permit them to pursue their chosen hobby.

SLOUGH HATS and FORAGE CAPS. - By 2 Yc.

Not receiving any comments, so far, as regards the change of my heading I will try the idea of changing it back again just to see what it brings. You know, the ham idea of reversing the leads now applied elsewhere.

The Mail this month was very light and I thought of the hard lot of 4RF tossing around on the billows, most likely too seasick to be of use to the Navy, whereas in Canberra he could have chased me up some notes, and on the side, done some work for the Navy.

Which reminds me...I wonder how Frank, 30F, is feeling at the time of writing this...er, more correctly, one week ago. His ship after a very short sojourn here went to sea in the middle of one of our worst gales. Wilf 2A1F has had plenty of experience on the Atlantic, but Frank sailed the last couple of years on land...or "Lake Albert" Frank. Hi! Anyway cares of a Ferry Officer notwithstanding 30F looks pretty fit and well. Blow into 2Ycs late one night...we talked till after 1 a.m. and at five, I woke him so that he would at least catch the only ferry going back to the ship. There are now three hams on the Australia...2:1F, 30F, and, I think, 61G. I hope the latter can give us some news of other "VK6s" as we hear very little about what is happening over there these days.

Another visitor to unexpectedly arrive here was VE4BB...of all precontests and an oldtimer on 28mc...P/o Beaton these days he is quite a bit fatter than when he was down at the last WIA Convention in VK2. I was able to let him read all about what an expert he was on 28mc way back in '28 when VK6EA was our DX per excellence, and he wasn't easy to work either. You had to be pretty patient on "ten" those days. 4BB had to work pretty hard to get into the Services, starting right from the bottom, i.e. trainees Mores Instructor. However, he seems to be very satisfied with the branch he is in now.

Bob Chilton 2RC another of the "Hoary Old Men" of ten and eighty is, I hear, now an instructor up at Richmond in the most advanced department of the RAAF. I wish Bob, you can be my "demonstrator" before this War is finished. Hi!

Somebody said 20R who was instructing at Richmond has landed a trip to G to get the latest dope, while the number of Hams who just casually, hop over to US and back seems to increase every time one hears the news of the day.

Heard a few stories of Bill Moore the other day. Bill did some pretty good work apparently. At one place where they sent him to install some gear the spot chosen was on top of a cliff and Bill, first of all had to build a light railway to get the gear up there..

so it was just as well he was a Waterboard Engineer besides a Ham. All VKs will be pleased to know that our Beard, at long last, has some water "to engineer". We got a damfull into the shop they could have had with pleasure.

Frank Hinc 2QL is still going strong up in VK9, and life up there seems to have been a lot livelier lately. I wonder if he is still, as he described it, "fairly comfortable..". Many of you will be able to interpret what that means more accurately than I can. He seems to have quite a collection of hams up there now. I'm sure he mentions 2MA, 2LH, 3VS, 3UD and 4BZ. Incidentally, 3UD is adjacent to 3VU, which should be a good combination, free from all CRM. Hi!

VK3VK has spent a short leave down in VIM but by now is back up north again. Bill Lewis 6XB/3VB has also had some leave, after about two years up Darwin way. Lt. Joe McEwan 3ALG is now down on a well earned rest and I hope he likes our "climate."

Had a letter from Sid Clark who has changed to Flinders Naval Base after a nice exciting couple of years in which he just about went everywhere there was to go. Any VK3 hams can get in touch with him for a bit. S. M. Clark, transmitting station, Flinders Naval Base. If the VK3 p/w ham's friend Sid give one of his years at a listening post some mind-boggling something, etc. At the time of writing Sid was after a wxt p.t. and check. 6.5 V heaters and 60 mls and up...probably scarce in VK3, how about VK3??? (They're scarceor'n than in VK3...Ed "AR")

It seems a long long time since we heard of 3MV and 3IK. It may be that the brand new VK mentioned in these notes of a few months ago has got Harry on his back. 3MV seems to have gone 'bout or maybe its just "alcoholic invasion". We'll tell you what it means if you don't know Jack. Anyway you SONS of the SEA, let's hear from you.

3KZ who was overseas with the AIF returned some time ago and Mac spends his time playing around with transmitters etc...Of course the exact whereabouts is a military secret, but Mac put in an appearance at the last VK3 meeting.

Among the members of the VKC we find STL..from information received Trab is a Lt. Colonel on full time duty and is in charge of activities for scores of miles around Korang. We would like to hear from you Trab.

3ZK was seen recently in VK3 when he was travelling through to his home on leave. He has been spending his time up in the north of Australia at a Catalina base where he attends to the electrical works of the kites.

And that's all for the month...see you again...don't forget all news to Jim Corbin VK2YC, 78 Malvern St., Perth. Phone MU1092.

D I V I S I O N A L N O T E S

.. New South Wales ..

May General Meeting of the Division was held at V.M.C.. Buildings, and the attendance was quite large. .. welcome was extended to an interstate visitor namely 3XJ.

Members were informed that one of the Divisional Life Members Mr. Harry Stowe ex-VK2CX had made a donation of Three guineas towards the funds of the Institute. Council's recommendation that £2/12/- be set aside to "adopt" a soldier under the Australian Comforts Fund scheme, and the balance be credited to the N.O.W. Fund was endorsed. A very hearty vote of thanks was accorded Mr. Stowe for his generous gift.

During the month 1st Class Radioman Jack Pitts VK2CX was entertained by Members of the Division. Jack is a glutton for in the real sense of the word. Last part of call prior to Australia was Iceland. More volunteers are wanted for the Hospital List. If some of you chaps could only realise just how grateful these folks are for the entertainment given them, that List could be full.

Congratulations to Councillor Neil Gough VK2TG upon the arrival of a bonny daughter. Well, well, well ! After all these years. What a silent worker too. Never mind, we'll certainly have "Pore on Parly" now.

Another Councillor in line for congratulations is Elgar Treherne VK2APQ. 2APQ recently joined the ranks of the happy (?) band of Benedicts. Mile sure that you bring her up the right way on. See that she keeps the log nicely and that the Qs's are always up to date.

On Friday 21st May a farewell Dinner was tendered Radio Inspector J. H. Brown affectionately known to all and sundry as "Jing", by members of the staff of C.B.H.'s Office. The function was representative of every section of Radio and the Division was represented by Messrs. Friddle and Ryan. An interesting document passed round for inspection was J.H.B.'s discharge from S.S. "Marettania" with the rating of Wireless Operator, dated 1905!

A demonstration of the Auxiliary Power Supply to be used in connection with the E.C.N. was given by Mr. C. Fryer VK2FP. This was voted an excellent piece of work. A description of this unit together with circuit diagram will appear in an early issue of the magazine.

The next Meeting of the Division will be held at V.M.C.A. Buildings on Wednesday 17th June, and it is hoped that CHA will have the opportunity of delivering his long awaited Lecture on Frequency Modulation.

EMERGENCY COMMUNICATION NETWORK.

The second series of message handling exercises have just concluded, and a marked improvement in operating ability has been shown by all the operators attached to the various stations. At the end of the first week-end JI and JN were level, closely followed by JL and JM. Only two points separated them. Next week JI had displaced JN and shared the lead with JI closely followed by JG, JN and JM. The third weekend JI, JL and JN were level at the head of the table closely followed by JM. The last weekend showed the positions unaltered. Here are the complete scores:-

VI2JI	193	VI2GF	171
VI2JL	193	VI2JC	171
VI2JN	193	VI2JE	162
VI2JM	188	VI2JH	159
VI2JJ	180	VI2JG	147

A comparison with the previous months point will exemplify in the improvement in operating ability. Last month 25 points separated the first and fifth competitors, i.e. "A" Division stations whilst this month only 13 points. In "B" Division 24 points separated sixth and tenth positions, last month 36. A striking example of how keen the boys are is shown by VI2JC. Last month these boys scored 166 points and made Division "A". This month although they scored five more points they could only make the "Bs".

At the May General Meeting of the Division Charles Fryar VK2NP demonstrated the Auxiliary Power Supply for Network Station. This consists of a universal transformer capable of operation from 240 volts A.C. or 6 volts D.C. and delivers 350 volts at 100 mills. A non synchronous type of vibrator is and 6X5GT's are used as rectifiers. A Full description of this unit will appear at an early date. Incidentally all components for this power supply have been made available free of charge by State Co-ordination.

Congratulations to VI2JL and the operators attached thereto George Littlefair VK2YV, George Patterson VK2AHJ and Iven Bailue VK2TN. These lads decided that they would improve on their first round showing and set to with a will to rectify slight defects in operating procedure and quality. Although content to share first place with JI and JN they reckon daylight will be second next month. Keep at it boys. That's the spirit. By the way 2VV that daughter of yours in the W.A.A.F.S. Is she a signaller?

VI2JL, Alec Little and Charlie Fryar, had to share first place this round. Look out next time fellows. These two lads show a splendid spirit. Having their own station operating excellently they spend their time going around helping those not so fortunate. That's ham spirit at its best. You should hear 2JI and 2JC cutting it out at 30 wpm.

VL2JN, Ross Treherne and Len Blackett by a very special effort managed to be on all four sessions with very good results. Keep it up boys.

VL2JM, Percy Dickson and Felix, again did very well. Not enough attention to procedure probably cost this station first place. By the way Percy built and operates this station all on his lonesome. Some moaners please note.

VL2JC, Gordon Cole 2DI, Eric Rugh 2ADK, Phil Cox 2IE, Will Dukas 2WD and Les Turner 2ABL set to with a will and effected considerable improvements over the last two week-ends, but left their run a little late. By the way Gordon, can you fold a "V" beam yet?

VL2JG. Jeff Thompson only operated three week-ends, but nevertheless scored 147 points. Another one that would have been near the top. You had better look out Fryer, there's all after you. By the way chaps, Jeff's loss of points was occasioned by one of his operators not being fully conversant with the operation of the station. This point has been stressed all along. It might have been a blitz!

VL2JE. Ray Patterson, 2AJW Jack Dark 2ADQ and Don "Floggo" Reed 2DH, showed considerable improvement but there's room for a lot more yet. Keep at it boys. One thing about these lads, they refuse to be beaten and keep plugging away.

VL2JJ, VL2JF, and VL2JH are disappointing. These stations were amongst the first to get going, but unfortunately have failed to live up to early expectations. VL2JJ, George Shoelley, John Keane, Arthur Springett and (sometimes?) George Walcock did well scoring 190 points. This is not good enough chaps, you can do better than that. How about putting the original mike tranny back. Any person desirous of course in Fingerprinting should apply to VL2JJ.

VL2JF. Alce Moss, Harold Peterson, Percy Rooney, Will Nelson and Peter Mulligan. For some unknown reason signal strength has dropped off considerably. Coupled with very poor procedure occasionally points are not as high as they could be.

VL2JH. Ern Hodgkins, Tom Barnes and their assistants are capable of doing very much better. A breakdown one session and poor quality other times brought a very low point score. This isn't like you Ern. Whataa.

URGENT. Wanted to purchase two type 809's for use at Centro. Must be in good condition. Will obtain release if under seal. Particulars to VK2ET, 21 Tunstall Avenue, Kingsford.

VICTORIAN DIVISION

The May meeting of the Division saw over fifty members and non-members present; the largest gathering for some considerable time.

The object of the meeting was to discuss an emergency Communication Network which has been under consideration by Council for some time.

The meeting freely discussed all matters appertaining to the formation of such a network, and it was the opinion of practically all present that any equipment should be powered from a primary source, completely independent of any outside power supplies.

It was finally decided on motion that the Victorian Division endeavour to obtain an interview with the Chief Air Raid Warden so that the Institute's plan could be discussed with him in an endeavour to obtain his approval for the formation of the Network.

The day following the meeting the Secretary wrote as instructed, and it was not until the 28th of May that a reply was received, asking the Secretary to ring and make an appointment suitable to both parties. This was done and an appointment was made for 2 p.m. on the 2nd of June.

The delegation from the Institute consisted of Messrs. H. N. Stevens VK3JO; R. Marriott VK3GI; J. K. Ridgway; I. Morgan VK3DH, and Chas Quin VK3WQ who were very well received by the authorities. After explaining the proposed scheme the authorities were of the opinion that the scheme proposed by the Institute could not be applied to the metropolitan area as their own system of radio communications were foolproof as had been proved after exhaustive tests under many different conditions. The members of the delegation after being shown the workings of this system were also of the opinion that it was foolproof. The Authorities, however suggested some alternative ideas which are being followed up by the Council, who will report the proceedings more fully at the next meeting of the Division. The meeting will be held at 191 Queen Street, Melbourne on Tuesday 6th July at 8 p.m.

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R. J. MARRIOTT, VK3SI; C. QUIN, VK3WQ.

Meeting Night—First Tuesday in each month.

**THE WIRELESS INSTITUTE
OF AUSTRALIA**

N.S.W. DIVISION

Registered Office:

**21 TUNSTALL AVENUE,
KINGSFORD**

Telephone: FX 3305

Meeting Place:

Y.M.C.A. Buildings, Pitt Street, Sydney.

SUBSCRIPTION RATES:

Full Membership 10/6
Service Membership 7/6

OFFICERS:

President: R. A. PRIDDLE, VK2RA.
Vice-Presidents: H. PETERSON, VK2HP
P. DICKSON, VK2AFB
Secretary: W. G. RYAN, VK2TI
Treasurer: W. McELREA, VK2UV
Councillors: V. BENNETT, VK2VA; N. GOUGH,
VK2NG; R. SMITH, VK2AIU; R. MILLER.

The Division meets on the Third Thursday of each month at Y.M.C.A. Buildings, Pitt Street, Sydney, and an invitation is accorded to all Amateurs to be present.

H A M S !

**DO YOU WANT TO BE
BACK ON THE AIR?**



**THE WIRELESS INSTITUTE
OF AUSTRALIA**

is the recognised spokesman of the
AUSTRALIAN AMATEUR

If you are not a member—
Join Now !

When the time comes that we can reasonably expect to go back on the air, we want to say that we represent—

EVERY ACTIVE HAM

in the Commonwealth.

Strengthen our hand by writing to The Secretary of the Institute in your State to-day.

DIVISIONAL ADDRESSES:

FEDERAL HEADQUARTERS:

BOX 1734JJ, G.P.O., SYDNEY.

NEW SOUTH WALES:

BOX 1734JJ, G.P.O. SYDNEY.

VICTORIA:

BOX 2611W, G.P.O., MELBOURNE.

QUEENSLAND:

BOX 1524V, G.P.O., BRISBANE

SOUTH AUSTRALIA:

BOX 284D, G.P.O., ADELAIDE.

WESTERN AUSTRALIA:

BOX N.1002, G.P.O., PERTH.

TASMANIA:

BOX 547E, G.P.O., HOBART.